

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-16. (Cancelled)

17. (Currently Amended) A method for manufacturing a semiconductor device comprising:

forming a porous insulating film above a semiconductor substrate;
forming a recessed portion on a surface of said porous insulating film; and
filling said recessed portion with a conductive material to form at least one of a plug ~~and/or~~ and a wiring layer;

wherein said porous insulating film is irradiated with electron beam to enlarge the size of pores of said porous insulating film.

18. (Original) The method according to claim 17, wherein said pores of porous insulating film formed above said semiconductor substrate has an average diameter of 1 nm or less.

19. (Currently Amended) The method according to claim 17, wherein enlarging the size of said pores through irradiation of electron beam onto said porous insulating film is performed subsequent to filling said recessed portion with ~~[[a]]~~ said conductive material.

20. (Currently Amended) The method according to claim 17, wherein filling said recessed portion with ~~[[a]]~~ said conductive material to form ~~[[a]]~~ at least one of said plug

~~and/or a~~ and said wiring layer includes depositing a Cu layer through a barrier metal film.

21. (New) The method according to claim 17, wherein, in forming said porous insulating film, said pores of said porous insulating film are formed by procedures including:

coating a varnish on a semiconductor substrate to form a coated layer;
heating said coated layer to vaporize a solvent in said varnish; and
further heating said coated layer to take place a chemical bonding reaction.

22. (New) The method according to claim 21, wherein said varnish is prepared by dissolving a porous insulating film material selected from the group consisting of methylsilsesquioxane, polymethyl siloxane, polyarylene, and polyarylene polyether.

23. (New) The method according to claim 22, wherein said porous insulating film material is methylsilsesquioxane having a weight average molecular weight ranging from 100 to 10,000.

24. (New) The method according to claim 17, wherein said porous insulating film is irradiated with an electron beam in the presence of at least one gas.

25. (New) The method according to claim 24, wherein said electron beam is irradiated at 1-20 kV in accelerating voltage.

26. (New) The method according to claim 24, wherein said electron beam is irradiated at 10-20000 $\mu\text{C}/\text{cm}^2$ in dosage of EB.

27. (New) The method according to claim 24, wherein said gas is introduced under condition of 0.1-100 Torr in pressure.

28. (New) The method according to claim 24, wherein said gas that has been introduced into said pores is excited to etch an inner wall of said pores.

29. (New) The method according to claim 28, wherein said porous insulating film is an organic silicone film and said inner wall of said pores is etched through said elimination of CH_3 group from said organic silicone film.

30. (New) The method according to claim 28, wherein said porous insulating film is an organic silicone film and said gas is selected from the group consisting of N_2 gas and O_2 gas.

31. (New) The method according to claim 30, wherein said gas is introduced at a flow rate ranging from 100 to 10000 sccm.

32. (New) The method according to claim 28, wherein said porous insulating film is an organic insulating film and said inner wall of said pores is etched through said elimination of carbon in said organic insulating film.

33. (New) The method according to claim 28, wherein said porous insulating film is an organic insulating film and said gas is selected from the group consisting of N₂ gas, O₂ gas, and H₂ gas.